

## CORRECTING DEVICE FOR A TIMEPIECE

This is a National Phase Application in the United States of International Patent Application No. PCT/EP2005/002493 filed March 9, 2005, which claims priority on European Patent Application No. 04007043.5, filed March 24, 2004. The entire disclosures of the above patent applications are hereby incorporated by reference.

### FIELD OF THE INVENTION

The present invention concerns a corrector device for a timepiece such as a wristwatch for correcting a piece of information provided by an indicator mechanism.

### BACKGROUND OF THE INVENTION

5           Some watches, in particular watches with complications, comprise such a large number of functions that it is not possible to correct them all by means of a single crown. This is why additional control means are used such as push-buttons. Among such push-buttons, there are known miniature push-buttons essentially comprising a socket driven into or bonded in an aperture made in the middle part of the watch and a  
10   cylindrical shaft formed of a single piece and able to slide freely into the socket. The shaft includes a first part passing through an aperture arranged at the inner end of the socket, and a second part of larger diameter than the diameter of the first part and comprising a groove for housing a sealing gasket cooperating with the inner wall of said socket. A push-button of this type comprises a return spring in the form of a  
15   spiral. The correction operations are performed by pushing the stem into the socket by means of a sharp instrument such as a ballpoint pen for example. During its movement forward, the push-button stem abuts against a lever via which the correction is carried out. Pushing in the stem compresses the spring. If the pressure on the stem is released, the latter returns to its rest position via the effect of the return  
20   force of the spring.

          Push-buttons of the type described hereinbefore have very reduced dimensions. Such push-buttons thus save space. Moreover, they do not project from the middle part and thus are not liable to be accidentally activated. However, they have the drawback of being unattractive and requiring the use of a tool in order to be  
25   actuated.

          It is thus an object of the present invention to overcome the aforementioned drawbacks in addition to others by providing a corrector device for a timepiece for correcting a piece of information which constitutes an alternative to the miniature push-buttons of the prior art.

## SUMMARY OF THE INVENTION

\_\_\_\_\_The present invention thus concerns a corrector device for a timepiece for correcting a piece of information provided by an indicator mechanism, the timepiece comprising a case delimiting a volume, the device being characterised in that it  
5 includes a control lever located outside the volume of the case and able to be actuated by a user, and an actuating lever located inside the volume of the case and cooperating with the indicator mechanism whose information needs to be corrected, the control lever and the actuating lever being connected to each other by a rotating connecting member able to rotate about a general axis of symmetry.

10 Owing to these features, the present invention provides a corrector device, which can be actuated very simply by the person wearing the watch by means of a finger or a nail. No tools are necessary for such an operation. The aesthetic appearance of the watch is also substantially improved insofar as the control lever can be given any appropriate shape which can match the general external forms of the  
15 watchcase.

According to a complementary feature of the invention, the control and actuating levers are rigidly connected to each other by means of a stem.

The constituent means of the corrector device according to the invention are of simple construction, which saves on manufacturing costs and guarantees the reliable  
20 operation of such a device.

## BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the present invention will appear more clearly from the following detailed description of an example embodiment of the  
25 corrector device according to the invention, this example being given purely by way of illustrative and non-limiting example, in conjunction with the annexed drawing, in which:

- Figure 1 is a cross-section of a watchcase provided with the corrector device according to the invention, this cross-section passing through one of the horns of the  
30 case, which enables a wristband to be attached;

- Figure 2 is a perspective view of the stem connecting the control lever to the actuating lever, and

- Figure 3 is a perspective view of the watchcase in which it can be seen that the control lever is embedded in a hollow made in the thickness of one horn of the  
35 case.

## DETAILED DESCRIPTION OF THE INVENTION

The present invention proceeds from the general inventive idea that consists in providing a corrector device for correcting a piece of information provided by an indicator mechanism, particularly of a multi-function watch, which is easy to handle, which is not detrimental to the aesthetic appearance of the watch and which is of simple construction.

Figure 1 is a cross-section of a watchcase along an axis parallel to the 12 o'clock – 6 o'clock axis. Designated as a whole by the general reference numeral 1, this watchcase essentially includes a middle part 2 on which a bezel 4 and a back cover 6 are fixed. According to a variant, the watch could be of the mono-shell type, i.e. the middle part 2/ bezel 4 or middle part 2/back cover 6 assembly could be made in one piece. Thus formed, this watchcase 1 delimits an internal volume 8 in which there is housed, in particular, a movement 10 which extends in a mid-plane P substantially parallel to the plane defined by back cover 6. This movement can be purely mechanical or of the electromechanical type powered by an electrical energy source (not shown). The watch could also be of the purely digital type with, for example, a liquid crystal display device and include an additional indicator mechanism as described hereinafter providing information that can be corrected by means of the corrector device according to the invention.

Designated as a whole by the general reference numeral 12, said corrector device according to the invention includes a control lever 14 and an actuating lever 16 connected to each other by a rotating connecting member 18 able to rotate about a general axis of symmetry X-X. In the embodiment shown in Figures 1 and 2, connecting member 18 takes the form of a stem 20 inscribed in the envelope of a cylinder and at the two ends of which are rigidly secured control lever 14 located outside volume 8 of case 1 and actuating lever 16 located inside said case 1.

Cylindrical stem 20 is advantageously made in a single piece. Two male squares 22 and 24 are machined on stem 20, engaged in two square female holes 26 and 28 provided in control lever 14 and actuating lever 16 such that said two levers 14 and 16 are immobilised in rotation relative to said stem 20. Cylindrical stem 20 also has a groove 30 housing a sealing gasket 32. Towards its lower end, stem 20 also has a reduced diameter for mounting an elastic ring 34, which is used for the axial immobilisation of actuating lever 16.

Corrector device 12 according to the invention is mounted in the following manner. Stem 20 provided with its sealing gasket 32 is introduced into a through hole 36 arranged in middle part 2 of the watch. This through hole 36 communicates with a cavity 38, which opens out inside volume 8 delimited by middle part 2 and

whose shape and dimensions are adapted to receive actuating lever 16. Once actuating lever 16 has been introduced into cavity 38 via its end with female square hole 28, stem 20 is lowered into through hole 36. Male square 24 of stem 20 penetrates female square hole 28 of actuating lever 16, such that the latter is secured to said stem 20 in rotation. The downward movement of stem 20 is interrupted when the latter abuts against bottom 40 of cavity 38. At that moment, elastic ring 34 can be engaged on stem 20 so as to immobilise actuating lever 16 axially relative to said stem 20. The next operation consists in mounting control lever 14 on stem 20 by engaging the male square of said stem 20 at its upper end in female square hole 26 of said control lever 14. Lever 14 is thus immobilised in rotation relative to stem 20. According to a first variant, lever 14 and stem 20 are made in one piece. According to a second variant, said lever 14 is welded onto said stem 20.

It will be observed that, according to a preferred but non-limiting embodiment of the invention illustrated in Figure 3, control lever 14 is embedded in a hollow 42 arranged in the lower surface of one of horns 44 of case 1. Control lever 14 thus does not project from the surface of watchcase 1, which improves the aesthetic appearance of the latter and prevents said lever 14 from being inadvertently activated by remaining, for example, caught on the sleeve of a piece of clothing.

The general axis of symmetry X-X of corrector device 12 according to the invention extends, in the examples shown in the drawing, substantially perpendicularly to the plane P of movement 10. Of course, according to a variant corrector device 12 could also extend parallel to the plane of the movement while being engaged radially in the middle part.

Corrector device 12 is intended to allow a user to correct an indication given by an indicator mechanism 46. The information to be corrected may be related to the time. It may be, for example, the day of the week or the phases of the moon. However, the information may also be completely unrelated to the time. In such case, indicator mechanism 46 may be, for example, a counter that is incremented to record the score of a round of golf. Thus, actuating lever 16 cooperates with a corrector lever 48, which is itself meshed, directly or indirectly, with indicator mechanism 46 that provides information that has to be corrected. In order to do this, the user has only to make control lever 14 pivot with his finger. This pivoting movement is transmitted by stem 20 to actuating lever 16, which in turn drives corrector lever 48. Advantageously, corrector lever 48 can exert an elastic return force on corrector device 12 to return control lever 14 to its rest position.

As can be seen upon examining Figure 3, the control lever can be provided with a snug 50 to facilitate handling thereof.

It goes without saying that the present invention is not limited to the embodiment that has just been described and that various modifications and simple variants can be envisaged by those skilled in the art without departing from the scope of the present invention as defined by the annexed claims.